

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in this patent application.

Listing of Claims

Claim 1 (Currently Amended): An information recording apparatus comprising:
a laser light source;
a dividing unit which divides a laser light emitted from the laser light source into ~~in~~ two laser lights;
a one-dimensional spatial modulating unit which applies one-dimensional spatial modulation to one of the two divided laser lights based on recording information;
a recording optical system which irradiates the spatially-modulated ~~spatial-modulated~~ laser light to a recording medium as a signal light and irradiates the other one of the two divided laser lights to the recording medium as a reference light, thereby to record the recording information on the recording medium; and
a moving unit which moves the recording medium with respect to the recording optical system such that an irradiation position of the signal light and the reference light relatively moves on the recording medium, wherein the recording optical system records the recording information while the moving unit is moving the recording medium,
wherein the one-dimensional spatial modulating unit comprises a grating configuration including a plurality of gratings, and
wherein the one-dimensional spatial modulating unit is positioned such that an alignment direction of irradiation images produced by the plurality of gratings is oblique with respect to a direction perpendicular to a moving direction of the recording medium by the moving unit.

Claim 2 (Canceled).

Claim 3 (Currently Amended): The information recording apparatus according to claim 1 [[2]], wherein the recording medium is a disc, wherein the moving unit rotates the disc,

and wherein the one-dimensional spatial modulating unit is positioned such that the alignment direction of the irradiation images produced by the plurality of gratings corresponds to a radial direction of the disc.

Claim 4 (Currently Amended): The information recording apparatus according to claim 1, ~~wherein the one-dimensional spatial modulating unit comprises a grating configuration having a plurality of gratings, and~~ wherein the one-dimensional spatial modulating unit is positioned such that ~~the an~~ alignment direction of irradiation images produced by the plurality of gratings ~~is shifted, by~~ has a predetermined angle, with respect to ~~the~~ [[a]] direction perpendicular to the moving direction of the recording medium by the moving unit.

Claim 5 (Original): The information recording apparatus according to claim 4, wherein the recording medium is the disc, wherein the moving unit rotates the disc, and wherein the one-dimensional spatial modulating unit is positioned such that the alignment direction of the irradiation images produced by the plurality of gratings has a predetermined angle with respect to the radial direction of the disc.

Claim 6 (Original): The information recording apparatus according to claim 1, further comprising a unit which controls a light quantity of the laser light from the laser light source based on the recording information.

Claim 7 (Canceled).

Claim 8 (Currently Amended): An information recording method comprising:
a dividing process which divides a laser light emitted from a laser light source into ~~in~~ two laser lights;
a modulating process which applies one-dimensional spatial modulation to one of the two divided laser lights based on recording information;
a recording process which irradiates the spatially-modulated ~~spatial-modulated~~ laser light to a recording medium as a signal light and irradiates the other one of the two divided laser lights

to the recording medium as a reference light, thereby to record the recording information on the recording medium; and

a moving process which moves the recording medium with respect to a recording optical system such that an irradiation position of the signal light and the reference relatively moves on the recording medium, and wherein the recording process is executed while the recording medium is being moved by the moving process,

wherein the modulating process uses a one-dimensional spatial modulating unit comprising a grating configuration including a plurality of gratings, and

wherein the modulating process positions the one-dimensional spatial modulating unit such that an alignment direction of irradiation images produced by the plurality of gratings is oblique with respect to a direction perpendicular to a moving direction of the recording medium by the moving process.

Claim 9 (Canceled).

Claim 10 (Currently Amended): An information recording medium on which the recording information is recorded by the information recording method ~~apparatus~~ according to claim 8 [[1]].

Claim 11 (Currently Amended): An information recording apparatus comprising:
a laser light source;
a one-dimensional spatial modulating unit which applies one-dimensional spatial modulation to a laser light emitted from the laser light source based on recording information;
a recording optical system which irradiates a light mainly including a luminance component of the spatially-modulated ~~spatial-modulated~~ laser light to a recording medium as a reference light and irradiates a light mainly including a phase component of the spatially-modulated ~~spatial-modulated~~ laser light to the recording medium as a signal light, thereby to record the recording information on the recording medium; and
a moving unit which moves the recording medium with respect to the recording optical system such that an irradiation position of the signal light and the reference light relatively

moves on the recording medium, wherein the recording optical system records the recording information while the moving unit is moving the recording medium,

wherein the one-dimensional spatial modulating unit comprises a grating configuration including a plurality of gratings, and

wherein the one-dimensional spatial modulating unit is positioned such that an alignment direction of irradiation images produced by the plurality of gratings is oblique with respect to a direction perpendicular to a moving direction of the recording medium by the moving unit.

Claim 12 (Canceled).

Claim 13 (Currently Amended): The information recording apparatus according to claim 11, ~~wherein the one-dimensional spatial modulating unit comprises a grating configuration having a plurality of gratings, and~~ wherein the one-dimensional spatial modulating unit is positioned such that ~~the an~~ alignment direction of the irradiation images produced by the plurality of gratings ~~is shifted, by~~ has a predetermined angle, with respect to ~~the~~ [[a]] direction perpendicular to the moving direction of the recording medium by the moving unit.

Claim 14 (Original): The information recording apparatus according to claim 11, further comprising a unit which controls a light quantity of the laser light from the laser light source based on the recoding information.

Claim 15 (Currently Amended): An information recording method comprising:
a modulating process which applies one-dimensional spatial modulation to a laser light emitted from a laser light source based on recording information;

a recording process which irradiates a light mainly including a luminance component of the spatially-modulated ~~spatial-modulated~~ laser light to a recording medium as a reference light and irradiates a light mainly including a phase component of the spatially-modulated ~~spatial-modulated~~ laser light to the recording medium as a signal light, thereby to record the recoding information on the recording medium; and

a moving process which moves the recording medium with respect to a recording optical system such that an irradiation position of the signal light and the reference light relatively

moves on the recording medium, wherein the recording process is executed while the recording medium is being moved by the moving process,

wherein the modulating process uses a one-dimensional spatial modulating unit comprising a grating configuration including a plurality of gratings, and

wherein the modulating process positions the one-dimensional spatial modulating unit such that an alignment direction of irradiation images produced by the plurality of gratings is oblique with respect to a direction perpendicular to the moving direction of the recording medium by the moving process.

Claim 16 (Currently Amended): An information recording medium on which the recording information is recorded by the information recording method ~~apparatus~~ according to claim 15 44.

Claim 17 (New): The information recording method according to claim 8, wherein the modulating process positions the one-dimensional spatial modulating unit such that the alignment direction of irradiation images produced by the plurality of gratings is shifted, by a predetermined angle, with respect to the direction perpendicular to the moving direction of the recording medium by the moving process.

Claim 18 (New): An information recording apparatus comprising:
a laser light source;
an optical element which divides laser light emitted from the laser light source into first and second laser lights;
a one-dimensional spatial modulating unit which applies one-dimensional spatial modulation to the first laser light based on hologram information;
a recording optical system which irradiates the spatially-modulated laser light onto a recording disc as a signal light and irradiates the second laser light onto the recording disc as a reference light, thereby to record the hologram information as hologram marks on the recording disc; and

a moving unit which moves the recording medium with respect to the recording optical system such that an irradiation position of the signal light and the reference light relatively moves on the recording disc,

wherein the one-dimensional spatial modulating unit comprises a grating configuration including a plurality of gratings, and

wherein the one-dimensional spatial modulating unit is positioned such that axial directions of the recorded hologram marks are offset with respect to a radial direction of the recording disc.

Claim 19 (New): A holographic disc encoded with hologram marks whose axial directions are offset relative to a radial direction of the holographic disc.

Claim 20 (New): A reproducing apparatus configured to reproduce information from the holographic disc encoded hologram marks whose axial directions are offset relative to a radial direction of the holographic disc.